

## ABSTRACT OF THE DISCLOSURE

A method for manufacturing oriented arrays of ceramic or metal oxide nanostructures, such as titania ( $\text{TiO}_2$ ) nanofibers. The nanofibers are formed on the surface of a body that is first sintered at a temperature in the range of about 1,100 to about 1,400 degrees Celsius. Subsequently, the surface is exposed to an  $\text{H}_2$ -bearing gas, such as  $\text{H}_2$  and  $\text{N}_2$  in a ratio of about 5:95 at about 700 degrees Celsius for about 8 hours. During heat treatment in the gas phase reaction, sintered titania grains transform into arrays of nanofibers oriented in the same crystallographic direction.